Topic I
Decomposition Strategies for Subtraction

1.OA.5, 1.OA.6, 1.OA.4

Focus Standard:
1.OA.5
Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

1.OA.6
Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Instructional Days: 5
Coherence -Links from: GK–M4
-Links to: G2–M4

Number Pairs, Addition and Subtraction of Numbers to 10
Addition and Subtraction of Numbers Within 200 with Two-Step Word Problems to 100

Similar to Topic E’s addition methods, Topic I allows students to learn methods for subtraction which involve subtracting 0 and 1, subtracting the whole number, subtracting one less than the whole number, and using familiar decompositions (5-groups and partners of 10) to conceptualize subtraction as finding a missing part (1.OA.6).

In Lesson 33, students use pictures and simple math drawings to show 0 less and 1 less and construct number sentences (1.OA.5). The discussion in Lesson 34 around what happens each time we take away 0 or 1 with numbers within 10 leads students to an understanding that this same reality remains true with all numbers. Similarly, students explore what happens in both n-n and n-(n-1) situations. They notice, “When I take 5 away from 5, I have zero every time!” and “5 – 4 is 1, just like 6 – 5 is 1! It’s just a number minus a number that’s one less gives me 1!” and again generalize this new understanding.

In Lesson 35, students transfer their knowledge of both doubles and fives to the context of subtraction, where they extract those known facts from given expressions. For instance, when faced with 8 – 5, students access the decomposition of 8 (“I know that 5 and 3 makes 8!”), and apply that understanding to help them solve subtraction problems (“So 8 – 5 must be 3!”). Lessons 36 and 37 continue on this explicit decomposition and subtraction connection, as students use their knowledge of partners of 10 and partners of 9 to help them solve subtraction stories and equations efficiently. Topic I is full of students using strategies, and discussing those strategies and patterns in order to gain fluency and facility with subtraction within 10,
and ultimately beyond!

A Teaching Sequence Towards Mastery of Decomposition Strategies for Subtraction

Objective 1: Model 0 less and 1 less pictorially and as subtraction number sentences. (Lesson 33)

Objective 2: Model $n-n$ and $n-(n-1)$ pictorially and as subtraction sentences. (Lesson 34)

Objective 3: Relate subtraction facts involving fives and doubles to corresponding decompositions. (Lesson 35)

Objective 4: Relate subtraction from ten to corresponding decompositions. (Lesson 36)

Objective 5: Relate subtraction from nine to corresponding decompositions. (Lesson 37)
Lesson 33

Objective: Model 0 less and 1 less pictorially and as subtraction number sentences.

Suggested Lesson Structure

- Fluency Practice (15 minutes)
- Application Problem (5 minutes)
- Concept Development (30 minutes)
- Student Debrief (10 minutes)
- Total Time (60 minutes)

Fluency Practice (15 minutes)

- Rekenrek Counting: Within 20 K.NBT.1 (3 minutes)
- Addition Sprint 1.OA.6 (10 minutes)
- 1 Less, 0 Less 1.OA.5, 1.OA.6 (2 minutes)

Rekenrek Counting (3 minutes)

Materials: (T) Rekenrek

Note: Reviewing the Kindergarten standard K.NBT.1 will prepare students for work with teen numbers in Module 2. Rekenreks can be made simply and inexpensively with cardboard, elastic, and beads. If this is not available to you, there are also interactive Rekenreks online such as:

T: (Move the top 10 beads on the Rekenrek to the right). How many red beads do you see?
S: 5.
T: How many white beads do you see?
S: 5.
T: 5 and 5 make?
S: 10
T: Count the Say Ten way as I move the beads. (Move one bead at a time up to 2 tens and back down to 10.)
S: Ten 1, ten 2...ten 9, 2 tens, ten 9, ten 8...ten.

Work up and down from ten 1 to 2 ten, from ten 2 to ten 9, from ten 3 to ten 8, ten 4 to ten 7 and ten 5 to
ten 6 and back out again.

**Addition Sprint (10 minutes)**

Materials: (S) Sprint: n – 1, n – 0

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

**0 Less, 1 Less (2 minutes)**

Ask questions to review subtraction language. Instruct students to answer on your signal (ex: snap).

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Suggested questions: “What’s 1 less than 8?”, “What comes before 6?”, “6 – 0 = ?”, “0 less than 9 is ?”, “9 is 1 less than?”, 9 = 10 - ?”, etc.

**Application Problem (5 minutes)**

9 children are playing outside. One child is on the swings and the rest are playing tag. How many children are playing tag? Write a number bond and number sentence. Make a math drawing to show how you know.

Note: This problem provides an application of the Lesson 32 objective, solving unknown addends, as well as continuing to explore “1 less,” a segment of the Lesson 33 objective.

**Concept Development (30 minutes)**

Materials: (T) Number bracelet of 10, white board or easel (S) Number bracelet of 10 beads (5 red, 5 white), previously used in Lesson 8, personal board

Have students bring materials to meeting area and sit in a semi-circle.

| T: How many beads are on your number bracelet? |
| S: 10 beads! (Students and teacher hold up bracelet.) |
| T: Take one bead away. (Pushes 1 white bead away from set, as shown. Students do the same.) |

NOTE ON MULTIPLE MEANS OF REPRESENTATION:

Integrating Children’s Literature, Poetry and Songs reinforces and supports mathematical knowledge for ELLs. Some suggested titles are: 10 Little Monkeys Jumping on the Bed by Child’s Play and Ten Sly Piranha’s by William Wise.
T: How many beads do we have now?  
S: (Count beads as needed.) 9 beads!  
T: Write a number sentence to show what we did.  
S/T: (Write $10 - 1 = 9$.)  
T: Push that bead all the way up until it is hiding in your hand. (Pushes bead into palm, as shown. Students do the same.)  
T: We have 9 beads.  

Repeat the process of taking 1 bead away and writing the new number sentence for the following suggested sequence: 9 - 1, 8 - 1, 7 - 1.  

T: Push your beads back and open your pipe cleaner so that your beads are in a straight line.  
S/T: (Adjust beads and pipe cleaner as shown.)  
T: Push a set of 3 white beads away to the end of the pipe cleaner. (Be sure students push 3 beads as a set, not one at a time to encourage decomposition rather than 1 to 1 counting.)  
T: Tell me a number sentence to describe what we did.  
S: $10 - 3 = 7$.  
T: Use your beads to show me 7-1. Write the number sentence on your board.  
S: (Show 6 beads together and 1 separated bead. Write $7 - 1 = 6$ on personal white boards.)  

Repeat the process for 5-1.  

T: We have 4 beads. This time, take 0 away.  
S: (Look at their beads.)  
T: How many beads do we have now?  
S: 4 beads!  
T: Hmm. Let’s try that with a larger number. Push all your beads back to the middle, so we can start with 10.  
S/T: (Push beads back to middle, showing all 10 beads.)  
T: We have 10 beads. Take away 0 beads. How many beads do we have now?  
S: 10 beads!  
T: Write the number sentence to show what we did.  
S/T: (Write $10 - 0 = 10$.)  

Repeat the process of taking 0 beads away and writing the new number sentence for the following suggested sequence: 9 – 0; 6 – 0.
Lesson 33: Model 0 less and 1 less pictorially and as subtraction number sentences.

Problem Set (10 minutes)

Students should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems. On this Problem Set, we suggest all students begin with number 1 through number 10 and possibly leave (a) through (j) to the end if they still have time.

Student Debrief (10 minutes)

Lesson Objective: Model 0 less and 1 less pictorially and as subtraction number sentences.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- How can solving number 1 help you solve Problem 3?
- Explain to your partner any patterns you see in Problems 3-10?
- Talk to your partner about how visualizing your 5-groups help you solve (g)?
- Explain how solving 10-0 can help you solve 122-0. What happens every time you subtract 0?
- Explain how solving 9-1 can help you solve 73-1? What happens every time you subtract 1? How does subtracting 1 relate to counting?
- How did the application problem connect to today’s lesson?
Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
**Lesson 34**

**Objective:** Model \( n - n \) and \( n - (n-1) \) pictorially and as subtraction sentences.

**Suggested Lesson Structure**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency Practice</td>
<td>12 minutes</td>
</tr>
<tr>
<td>Application Problem</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Concept Development</td>
<td>33 minutes</td>
</tr>
<tr>
<td>Student Debrief</td>
<td>10 minutes</td>
</tr>
<tr>
<td><strong>Total Time</strong></td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

**Fluency Practice (12 minutes)**

- 1 Less/2 Less 1.OA.6 (2 minutes)
- Sprint \( n-0 \) and \( n-1 \) 1.OA.6 (10 minutes)

**1 Less/2 Less (2 minutes)**

Note: This activity builds on the previous day’s lesson and prepares students to solve today’s application problem. It builds on the counting sequence within 120.

T: I’ll say a number. You say 1 less at the signal.

Suggested sequence: 4, 14, 24, 9, 19, 20, 10, 20, 30, 25, 35, 45, 63, 73, 83, 81, 91, 101. When ready, change to 2 less.

**Sprint \( n-0 \) and \( n-1 \) (10 minutes)**

Materials: (S) Sprint.

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

**Application Problem (5 minutes)**

83 beads spill on the floor. A student picks up 1 bead. How many beads are still on the floor? Write a number bond, number sentence, and a statement to share your solution.

Extension: If a second child picks up 10 more beads, how many
Lesson 34:
Model \( n-n \) and \( n-(n-1) \) pictorially and as subtraction sentences.

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1. How are these problems similar to each other?
   S:  We are taking away the total amount.
   T:  When we have a number, and we subtract that exact number, what part are we left with?
   S:  Zero!
   T:  Let’s try something different. Start with 10 beads again.
   S/T: (Reset pipe cleaner to show all ten beads as a set.)
   T:  Take away 9 beads. (Pushes 9 beads slightly farther beads will remain on the floor? Use number bonds to show how you know.

Note: This problem enables students to apply their learning from the previous day to a number they can’t visualize (easily). Instead, students will use their understanding of the “subtracting one” along with their knowledge of the counting sequence within 120.

Concept Development (33 minutes)

Materials: (T) Number bracelet of 10, white board or easel (S) Number bracelet of 10 beads (5 red, 5 white), used in previous day’s lesson, personal white board

Have students bring materials to meeting area and sit in a semi-circle.

T:  Stretch out your bracelet into a long line of beads, like we did yesterday.
S/T: (Adjust pipe cleaner into a straight line.)
T:  How many beads do we have in this set?
S:  10 beads!
T:  Take 10 beads away. (Pushes 10 beads to the other side of the pipe cleaner. Students do the same.)
T:  How many beads do we have now?
S:  Zero!
T:  Write the number sentence to show what you did. Write the number bond also.
S/T: (Write 10 – 10 = 0 on personal white boards.)
T:  Start with 8 beads now. (Pushes 8 beads back to main section of the pipe cleaner. Students do the same.)

Repeat the process using the following suggested sequence: 8 – 8; 7 – 7; 6 – 6.

T:  How are these problems similar to each other?
S:  We are taking away the total amount.
T:  When we have a number, and we subtract that exact number, what part are we left with?
S:  Zero!
T:  Let’s try something different. Start with 10 beads again.
S/T: (Reset pipe cleaner to show all ten beads as a set.)
T:  Take away 9 beads. (Pushes 9 beads slightly farther
Lesson 34:

Model “n-n” and “n-(n-1)” pictorially and as subtraction sentences.

Lesson Objective: Model “n-n” and “n-(n-1)” pictorially and as subtraction sentences.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can
be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What pattern did you notice between Problems 3 -10?
- How were your drawings different in Problems 5 and 6?
- How did the application problem connect to today’s lesson?
- How can solving 10-10 help you solve 1,272-1272….10,629-10,629 and 1,000,000 - 1,000,000.
- How can solving 9-8 help you solve 759-758….2,478-2,477…..1,000,001-1,000,000?

**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 35

Objective: Relate subtraction facts involving *fives* and *doubles* to corresponding decompositions.

Suggested Lesson Structure

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Fluency Practice</td>
<td>14 minutes</td>
</tr>
<tr>
<td>Application Problem</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Concept Development</td>
<td>31 minutes</td>
</tr>
<tr>
<td>Student Debrief</td>
<td>10 minutes</td>
</tr>
<tr>
<td><strong>Total Time</strong></td>
<td><strong>60 minutes</strong></td>
</tr>
</tbody>
</table>

Fluency Practice (14 minutes)

- **Cold Call 1.OA.6** (2 minutes)
- **n – n, n – (n – 1) 1.OA.6** (10 minutes)
- **Speed Writing** (2 minutes)

Cold Call (2 minutes)

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Ask questions to practice subtraction situations for *n–n* or *n–(n–1)* problem types. Tell students you will “Cold Call” them to say the answer as quickly as possible. Alternate between calling on individual students, the whole class, and groups of students (e.g., only boys or only girls). Use the example dialogue below as a reference.

T: Listen carefully to my question so you will be ready if I call on you. What is 6 – 6? (Pause to provide thinking time.) Everybody.
S: 0.
T: 1 less than 6 is? (Pause.) Boys?
S: (Only boys.) 5.
T: We know 6 – 6 is 0. What is 6 – 5? (Pause.) Girls.
S: (Only girls.) 1.
Lesson 35: Relate subtraction facts involving fives and doubles to corresponding decomposition.

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Sprint: \( n - n, n - (n - 1) \) (10 minutes)

Materials: (S) Sprint: \( n - n, n - (n - 1) \)

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Speed Writing (2 minutes)

Materials: (S) Personal white boards or plastic sleeves

Note: This activity focuses on the counting sequence to 120, while continuing to develop foundational skills for place value. By writing and whispering, students engage multi-modalities for learning.

Tell students to write their numbers from 10 to as high as they can in one minute, while whisper counting the Say Ten way.

Application Problem (5 minutes)

The teacher spilled 18 beads on the floor today. A student picked up 17 of the beads. How many beads are still left on the floor? Write a number bond, number sentence, and a statement to share your solution.

Extension: If the 17 beads had been picked up by two students, how many beads might each student have picked up? Make a number bond to show your solution.

Note: This problem enables students to apply Lesson 34 objective to a number they can’t visualize (easily). During the Student Debrief, students consider how tools such as 5-groups and Rekenreks might help them solve the problem.

Concept Development (31 minutes)

Materials: (S) Number bracelet of 10 beads (5 red, 5 white) used in previous day’s lesson, personal white boards

| T: | Show me 7 the Math Way. How many fingers did you use on your left hand? |
| S: | (Hold up 5 fingers on their left hands and the thumb and index finger on their right hands.) 5. |
| T: | Show me 7 – 5 by hiding your 5. |

Notes on Multiple Means of Engagement:

Some students may need to make real life connections to concepts such as doubles and 5-groups. Allow students the opportunity to explore doubles and 5-groups they see in real life (pairs of shoes, 4-wheelers, legs of a spider, doubles on dominoes, and their fingers).
Lesson 35:
Relate subtraction facts involving fives and doubles to corresponding decomposition.

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NOTES ON MULTIPLE MEANS OF REPRESENTATION:

For those students who are developing fluency with math facts, provide a visual tool, such as the addition chart with the doubles facts, for the students to reference until this skill becomes automatic.

S: (Hide their left hands.)
T: What’s the answer?
S: 2.
T: Give me the complete number sentence.
S: 7 minus 5 is 2.
T: Show me your 7 again. Subtract 2 by hiding your 2. The answer is?
S: 5.
T: Give me the complete number sentence.
S: 7 minus 2 is 5.

Quickly repeat the same process, subtracting 5 and its partner from 6 through 10 on their hands.

T: Please take out your bracelets and start with 8 beads. (Project 8 – 5.) Use your beads in one movement to show me the answer. Write the number sentence and number bond.
S: (Push 5 beads in one movement away from the set and write 8 – 5 = 3. Circulate and have them do the exercise again if they move the beads one, two, three, or four at a time.)
T: How did you solve this so quickly?
S: I moved just my red beads in a 5-group. → I moved a group of 5 without counting out 1, 2, 3, 4, 5.
T: How did you know how many to push at once?
S: The beads are in groups of 5.
T: Push them back together to have 8 and try this one. (Project 8 – 3.)
S: (Push the 3 white beads away from the set and write 8 – 3 = 5.)
T: What did you push away as a group?
S: The 3 white beads.
T: What did you have left?
S: The 5 red beads.

Repeat the process using the following suggested sequence: 9 – 5; 9 – 4; 7 – 5; 7 – 2.

T: Great job visualizing larger groups to help you subtract quickly. Now we will use a different way to visualize, or see groups, to help us subtract. Put your bracelets back together so you have 10 beads total. What two equal parts do you see?
S: 5 and 5.
T: That’s right. Remember, facts like 5 + 5 are part of a special group of addition facts. What are they called?
S: Doubles.
T: Starting at 1 + 1, let’s recite our doubles facts. Point your fingers together as we say them.
Lesson 35: Relate subtraction facts involving fives and doubles to corresponding decompositions.

S/T: 1 + 1 = 2; 2 + 2 = 4; 3 + 3 = 6; 4 + 4 = 8; 5 + 5 = 10.

T: Doubles can be easy to see, just like 5-groups. Let’s see if we can spot which of these subtraction facts are made from doubles. Visualize your doubles facts as we look for them.

T: (Project three subtraction expressions: 7 – 3; 8 – 4; 9 – 2.)

T: Which subtraction expression is splitting up a double? Turn and talk with your partner to decide. Talk about how you know. Write the number sentence and number bond on your paper.

S: (Discuss with partner, while teacher circulates and listens.)

T: I like how you proved your idea to your partner by showing the doubles on your fingers. Try more.

Repeat the process using the following suggested sequence of 3 sets of expressions:
(a) 5 – 2; 8 – 3; 4 – 2; (b) 7 – 4; 6 – 3; 10 – 4;
(c) 8 – 4; 6 – 3; 10 – 5. The last set purposely has three doubles facts as students begin to visualize their doubles and recognize the facts within the subtraction context more quickly.

Problem Set (10 minutes)

Students should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

On this Problem Set, most all students begin with Problems 1 through Problem 5 and possibly leave Problems 6 through Problem 11 to the end if they still have time.

Student Debrief (10 minutes)

Lesson Objective: Relate subtraction facts involving fives and doubles to corresponding decompositions.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.
Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- Look at Problem a through Problem f on the top of Page 2.
- Talk to your partner about what you visualized to help you solve these problems.
- How can your hands help you solve problems like these? (Fingers are like 5-groups.)
- How are your hands similar to the number bracelet? How are they different?
- Look at the last six problems at the bottom of Page 2, Problem a through Problem f. What problems did you use 5-groups for? Which did you use doubles for? Were there any problems that you could have used both?
- Look at how you solved the application problem. How can we use the Rekenrek to solve this same problem? How can we use 5-groups to solve this problem?

**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 36

Objective: Relate subtraction from ten to corresponding decompositions.

Suggested Lesson Structure

- Fluency Practice (13 minutes)
- Application Problem (5 minutes)
- Concept Development (32 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (13 minutes)

- Counting the Say Ten Way K.NBT.1 (2 minutes)
- Ten-Frame Flash K.OA.5, 1.OA.6 (3 minutes)
- Number Bonds of Ten K.OA.5, 1.OA.6 (8 minutes)

Counting the Say Ten Way (2 minutes)

Note: Say-Ten counting reinforces place value and prepares students to decompose teen numbers.

Count in the teens, alternating between saying numbers the regular way and the Say Ten way. 2 ten, 19, ten-8, 17, ten-6, 15, ten-4, 13, ten-2, 11.

Ten-Frame Flash (3 minutes)

Materials: (T) Ten-frame cards, 5-group cards

Note: 5-group cards precede the use of ten-frame cards. The ten-frame’s rows are closer so many students may see 7 as 4 and 3. This is less apt to happen when students have a strong background with 5-groups which clearly best support their understanding of place value.

Take out the 7 dot 5-group card and ask students to compare and contrast it with the 7 dot ten-frame card. Probe students to notice that the rows have the same number of dots, but that the rows are closer together on the ten-frame cards.

Flash a ten-frame card for two to three seconds and instruct students to identify the number on your signal (or snap). Flash the cards a second time and ask for the partner to 10. Begin with numbers closest to 10 first, because it is easier to identify the partner to 10.
Lesson 36

Lesson 36: Relate subtraction from ten to corresponding decompositions.

Date: 5/9/13

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSIONS:

Partner share time provides a good opportunity to facilitate student analysis of work, allowing students to evaluate the process and analyze errors. Careful choice of partners is important when students are developing these skills.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Provide challenging extensions for students that are ready by connecting partners to 10 to numbers to 100. For example, some pairs could have double-digit numbers. Their goal would be to find the partner to make the next ten and complete a number bond. (46, 4, 50.)

Number Bonds of 10 (8 minutes)

Materials: (S) Numeral Cards 1-10, 10 two-sided beans or counters, a plastic sleeve with ten-frame or number bond insert

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Assign students partners of equal ability. Students put numeral cards face down in front of them. One partner flips over a card and adds counters to the ten-frame, (a partner flips 9 and adds nine red counters to the ten-frame). The other partner fills up the empty cells, using the other side of the counters, (one white counter). The partners will then work together to fill in a number bond.

Application Problem (5 minutes)

There are 10 beads on the floor. There is the same number of red beads as white beads. A student picks up the white beads. How many beads are still on the floor? Write a number bond, number sentence, and a statement to share your solution. Make a math drawing to show how you know.

Note: Today, we are starting the lesson with the application problem because the final fluency activity sets up well for the lesson. This problem enables students to apply their learning from the previous day, using doubles facts and 5-groups to solve subtraction. Additionally, it bridges to the current lesson, which will focus on decompositions of 10.

Concept Development (32 minutes)

Materials: (T) Number bracelet of 10, white board or easel (S)
Number bracelet of 10 beads (5 red, 5 white), used in previous day’s lesson, personal white boards

Before students come to the meeting area, the teacher slips four white beads off of the teacher pipe cleaner and places them in pocket, out of view of the students. Have students bring materials to the meeting area and sit in a semi-circle.
Lesson 36:

Relate subtraction from ten to corresponding decompositions.

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Oh no! My bracelet broke and is missing some of its beads. (Shows pipe cleaner to class, holding it far enough away so that students cannot touch each bead to count.)

How many beads are on my bracelet?
6 beads.

Wait, how many beads do you have on your bracelet?
10.

Use one movement of beads to find out how many fell off my bracelet.

(Push 6 away in one movement from the set to find 4.) Four of your beads fell off.

Write a number sentence and number bond to show what just happened to my bracelet.

(Write 10 – 4 = 6, and write the corresponding number bond.)

(Assign partners. Project 10 – 1.) Partner A, use your beads to show Partner B the answer to this problem. Write the number sentence and number bond on your personal white boards.

(Partner As push one bead away from the set, write 10 – 1 = 9, and write the number bond.)

How many beads are left?
9 beads.

(Project 10 – 9.) Partner B, use your beads to show Partner A the answer to this problem. Write the number sentence and number bond on your personal white boards.

(Partner Bs push nine beads away from the set, write 10 – 9 = 1, and write the number bond.)

Look at your stretched out bracelets. Talk with your partner: What’s the same or different about them?

(Discuss with partner. Teacher circulate and listen.) They’re the same; mine is just facing the other way. → When I flip my bracelet over, it’s exactly the same as my partner’s.

Look at your number bonds and equations. Talk with your partner: What’s the same of different about them?

(Discuss with partner.) (Teacher circulate and listen.) Our number bonds are the same. → Our number sentences use the same numbers and always start with 10 as the whole.

(Project 10 – 7.) Partner A, use your beads to show Partner B the answer to this problem. Write the number sentence and number bond on your personal white boards.

(Partner As push seven beads away from the set, write 10 – 7 = 3, and write the number bond.)

Partner B, use your bracelet to show Partner A the other subtraction sentence, which matches your number bond. Write the number sentence.

(Partner Bs push three beads away from the set and write 10 – 3 = 7.)

Repeat this process using 10 – 6, starting with Partner B so that Partner A has a hand at coming up with the other subtraction equation. If it seems necessary, continue the process two more times, using 10 – 8 and 10 – 3.

You’ve been writing some wonderful number bonds, taking apart 10. Now I’m going to show you a number bond that’s not quite finished. (Shows unfinished number bond)

Unfinished number bond

10
4

10 - 4 = 6

Partner in white board.

10 - 1 = 9

10 - 9 = 1

10 - 7 = 3

10 - 3 = 7

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number bond with 10 in the total box, 4 in a part box, and the other blank.) What goes with 4 to make 10?

S: 6.

T: Good. Now write both subtraction sentences all by yourself.

S: (Write $10 - 4 = 6$ and $10 - 6 = 4$.)

Repeat this process with the following number bonds:

**Problem Set (10 minutes)**

Students should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

On this Problem Set, we suggest all students begin with Problems 1 through Problem 6 and possibly leave Problems (a) through Problem (d) until the end if they still have time.

**Student Debrief (10 minutes)**

**Lesson Objective:** Relate subtraction from ten to corresponding decompositions.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What math tool did we learn about today? (The ten-frame.) What did our ten-frames help us do
today?

- How are ten-frames and our bracelets the same in appearance; what they can help us do? How are they different?

- Which Problem Set question(s) is the application problem similar to? How do you know? How did you solve them similarly or differently?

- Look at Problem 4 and Problem 6. How could Problem 4 help you solve Problem 6? What’s different about them?

- Why is there only one number sentence for Problem 5?

- Explain to your partner how you decided to solve Problem 7, Problem 8, Problem 9, and Problem 10. What helped you? How did you solve them differently or similarly?

- Can we visualize rather than holding our bracelets, ten-frames or five groups?

**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 37

Objective: Relate subtraction from nine to corresponding decompositions.

Suggested Lesson Structure

- Fluency Practice (14 minutes)
- Application Problem (6 minutes)
- Concept Development (30 minutes)
- Student Debrief (10 minutes)
- Total Time (60 minutes)

Fluency Practice (14 minutes)

- Choral Counting: The Regular and the Say Ten Way 1.NBT.2 (2 minutes)
- Ten Frame Flash K.OA.5, 1.OA.6 (2 minutes)
- Partners to 10 K.OA.5, 1.OA.6 (10 minutes)

Choral Counting: The Regular and the Say Ten Way (2 minutes)

Note: This activity supports students’ ability to maintain their fluency with the counting sequence while also building the foundational skills for place value.

Tell students to count with you, alternating between the regular and the Say Ten way (ex: 12, ten 3, 14, ten 5, etc.). Start at different numbers within 40. If students are ready, try counting back, too.

A Ten Frame Flash (2 minutes)

Materials: (T) Ten-frame cards

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting with 10, using visual models to support stronger foundational development.

Flash a ten-frame card for 2-3 seconds and instruct students to identify the number on your signal (or snap). Ask for a subtraction sentence to find the missing part.

Sprint: Partners to 10 (10 minutes)

Materials: (S) Sprint: Partners to 10 problem set

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Some students would benefit from having a set of ten-frame cards to use as a reference and to have available for practice. This practice should include flipping the cards over to encourage visualization of the numbers and their partners.
Lesson 37:

Relate subtraction from nine to corresponding decompositions.

Date: 5/9/13

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Application Problem (6 minutes)

There are 10 beads on the floor. A student picked up some of the beads and left some on the floor. Write a number bond and a number sentence that would match this story.

Extension: What other number bonds and number sentences could match this story? Try to list all of the possibilities. (Encourage all students to attempt this.)

Note: This problem applies the objective from Lesson 36, decompositions of 10 and their related subtraction facts. This also connects to the current lesson’s concept development, which focuses on all of the decompositions of 9 in a similar way.

Concept Development (30 minutes)

Materials: (T) Number bracelet of 10, personal white board or easel (S) Number bracelet of 10 beads (5 red, 5 white), used in previous day’s lesson, personal white boards

Have students bring materials to meeting area and sit in a semi-circle.

T: (Assigns partners, and projects 10 – 5.) Partner A, use your beads and also show Partner B the number sentence and number bond on your white board. Explain as you go.

S: (Students do so.)

T: (Projects 9 – 5.) Partner B, take off 1 bead and put it behind you to have 9. (Pause.) Use your beads and also show Partner A number sentence and number bond on your white board. Explain what you did.

S: (Students do so.)

T: Compare your bracelets, your number sentences and number bonds. How can Partner A’s work help you solve Partner B’s work?

S: (Discusses with partner. Teacher circulates and listens.) Partner B’s starts with 1 less as the whole, but we both took 5 away, and Partner B’s answer is 1 less! → 9 is 1 less than 10, so when we take 5 away, our answer will be 1 less. → It’s just like on the addition chart! → We take away a five group so it’s 4 left not 5.

T: Good! Now Partner A, please remove 1 bead and place it behind you to make sure you have 9.

S: 9!
Lesson 37: Relate subtraction from nine to corresponding decompositions

Date: 5/9/13

T: (Projects)
Use your beads and also show the number sentence and number bond on your white board.

S: (Push 1 bead away from the set, finish the number bond and write 9 – 1 = 8.)

T: What is the other number sentence you can write to describe this number bond?

S: 9 – 8 = 1!

T: Yes. Please write it below your first number sentence.

S: (Write 9 – 8 = 1.)

T: Now you’re going to write (on your white board) all of the other number bonds with 9 as the total or the whole, and the subtraction sentences that describe each number bond. You can move around the room to do this. Hmmm, what tools can you use to help you do this?


T: Talk with your partner!

As students work, circulate and support them as appropriate. When most students have finished, have them return to the meeting area.

T: What strategies did you use to be sure that you got every way to make 9?

S: I used my bracelet, and showed 1 less each time! → I checked mine over a couple of times, and showed it with my bracelet.

T: What strategies did you use to be sure that you showed the subtraction sentences that described the number bonds?

S: I actually took the beads away on my bracelet! → I flipped my bracelet after I made the first subtraction sentence.

Problem Set (10 minutes)

Problem sets are intended to be completed within a time frame rather than a task frame. All students are expected to do their personal best within the approximately 10 minutes allotted for this portion of the lesson. On this problem set, we suggest all students begin with Problems 1–6 and possibly leave Problem 11(a–d) to the end if they still have time.
Lesson Objective: Relate subtraction from nine to corresponding decompositions.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the problem set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- Look at Problem 2 and Problem 6. What is similar and different about them? How did you use Problem 2 to help you solve Problem 6?
- Look at Problems 7–10. What strategy or strategies did you use to solve these? How was your strategy different or similar to your partner’s?
- Which strategy is the most efficient for solving Problems 7–10? Why?
- How did the application problem connect to today’s lesson?
- How can you visualize 9? What do you see in your brain? Does that help you to subtract from 9?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.